

REMARKS:

- 1) Referring to item 10) of the Office Action Summary, the Examiner is respectfully requested to approve the formal drawings originally filed with this application on November 28, 2001, in the next official communication.
- 2) Referring to item 13) of the Office Action Summary, the Examiner is respectfully requested to acknowledge receipt of the Priority Document, which was filed by mail on May 6, 2003 and received in the USPTO on May 9, 2003. Thus, the Priority Document and the outstanding Office Action essentially "crossed in the mail".
- 3) The specification has been amended in an editorial manner to correct a few typographical and grammatical errors. Also, a feature of the invention clearly disclosed in original Figs. 1 to 4, regarding the particular shape of the protrusion and the recess forming the seal or seals, has now been more particularly described in a new paragraph inserted at page 7, between lines 30 and 31 of the specification. Merely describing in the specification the subject matter that was clearly disclosed in the original drawings does not introduce any new matter. All of the present amendments are supported by the substance and the context of the original disclosure, including the drawings, and do not introduce any new matter. Entry of the amendments is respectfully requested.

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- 4) Original claims 1 to 6 have been canceled. New claims 7 to 13 have been added. The new claims are supported by subject matter of the original claims and the original disclosure as shown in the following table, and do not introduce any new matter. Entry and consideration of the new claims are respectfully requested.

New Claims	7	8	9	10	11	12	13
Original Support	Cl.1,2; Fig.2	Fig.2	Fig.2	Fig.2	pg.1, ln.8; pg. 2, ln.32-33; pg.3, ln.31-32; pg.8, ln.9-10	Cl.3	Cl.6

- 5) Referring to pages 2 and 3 of the Office Action, the applicants hereby affirm the election of Species I as shown in Fig. 2 and relating to original claims 1 to 3 and 6. All of the new claims 7 to 13 read on the elected Species I of Fig. 2. Incidentally, there seems to be a typographical error in the Examiner's proposed correspondence between the claims and the Species at the middle of page 2 of the Office Action. Namely, the proposed correspondence states that claim 5 corresponds to Species 6 - 9, **and** that claim 5 corresponds to Species 8 and 9. The latter of these seems to be correct.
- 6) Referring to pages 4 to 5 of the Office Action, the rejection of claims 1 to 3 as obvious over U. S. Patent 5,609,757 (Schiavo et al.) in view of German Patent Laying Open Document 2,222,004 (Weppler) is respectfully traversed. This rejection will be

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discussed in connection with the new claims 7 to 13, since the original claims have all been canceled.

- 7) New independent claim 7 combines subject matter from original claims 1 and 2, as well as a further clarification regarding the shape and cooperation of the protrusion and the recess that form the seals.

Claim 7 is directed to a filtration apparatus including a housing head, a housing bowl, and a releasable clamping device that detachably clamps the head and the bowl together. The housing head has a ring-shaped sealing portion and the housing bowl has a ring-shaped sealing portion that abut against each other. One of these sealing portions is a protrusion and the other is a recess.

As seen on an axial-section along a cylindrical axis line of the housing head and the housing bowl, the protrusion has a radially inner arcuate curved protrusion surface and a radially outer arcuate curved protrusion surface. The radially inner arcuate curved protrusion surface presses against a radially inner recess wall portion of the recess to form a first inner circular seal, and the radially outer arcuate curved protrusion surface presses against a radially outer recess wall portion of the recess to form a second outer circular seal.

This seal configuration and arrangement is exemplified in present Fig. 2, where it can be clearly seen that the radially inner arcuate curved protrusion surface presses against the radially inner recess wall portion to form the first inner circular seal (33), while the radially outer curved protrusion

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surface presses against the radially outer recess wall portion to form the second outer circular seal (34). Such formation of two circular seals (33, 34) is highly effective to achieve a good sealing effect, thereby avoiding the need for an O-ring or the like, as explained in the present specification.

In the Election Requirement made by telephone on April 28, 2003 and reiterated in the present Office Action, the Examiner has recognized and asserted that the sectional shape of the protrusion and of the recess forming the cooperating seal members is a significant and patentably distinguishing feature of such seal arrangements.

The prior art of record neither discloses nor would have suggested the presently claimed combination of features, shapes, and cooperation of the protrusion and the recess to form two circular seals according present claim 7.

- 8) The Examiner has applied Schiavo et al. for general teachings regarding a filter apparatus including a housing head, a housing bowl, and a clamping device. The Examiner has admitted that Schiavo et al. do not disclose the presently claimed arrangement and interaction of the sealing portions of the housing head and the housing bowl. For such a teaching, the Examiner has turned to the Weppler reference.
- 9) It is respectfully submitted that a person of ordinary skill in the art would not have been motivated to combine the teachings of the Weppler reference with those of Schiavo et al.

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Schiavo et al. purposely and necessarily provide a plurality of O-rings (see e.g. Figs. 6, 7 and 8) for achieving a seal between the housing head and the housing bowl. Schiavo et al. expressly teach that it is advantageous to provide and arrange concentric O-rings in this manner (see e.g. col. 2, lines 13 to 50). A person of ordinary skill in the art reading such teachings of Schiavo et al. regarding particular advantages that are to be achieved by providing O-rings to form a seal between the housing head and the housing bowl in the arrangement of Schiavo et al., would not have been motivated to stray away from such an advantageous required seal arrangement, to instead provide a seal arrangement according to Weppler.

Namely, a person of ordinary skill in the art is not motivated to do exactly the opposite of the express teachings of a reference, such as Schiavo et al., and particularly to abandon the teachings that aim to achieve special advantages according to a reference, such as Schiavo et al. Therefore, a person of ordinary skill in the art reading the Schiavo et al. disclosure would not have been motivated to turn to the teachings of Weppler in the first place.

- 10) Even if the teachings of Weppler would have been considered in combination with those with Schiavo et al., the presently claimed inventive arrangement would not have resulted and would not have been suggested.

As generally discussed above, new independent claim 7 requires a particular sectional configuration and interaction of the protrusion and the recess to form two circular seals.

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Namely, claim 7 requires that the protrusion must have respective radially inner and outer arcuate curved protrusion surfaces that respectively press against radially inner and radially outer recess wall portions of the recess, to respectively form inner and outer circular seals.

The Weppler reference does not disclose and would not have suggested such a configuration and interaction.

- 11) Weppler discloses a filter apparatus including a housing head and a housing bowl, whereby one of the facing rims of the two parts has an annular groove, and the other of the facing rims of the two parts has a protruding annular edge or seal element (see Abstract). The seal element and the groove each have a conical or wedge-shaped cross-section (see Abstract and Figs. 1 to 3).

More particularly, the reference explains that the sealing effect is improved by providing slight differences in the sectional shape, for example the slight conicity or wedge-shaped taper of the mutually contacting wall surfaces of the recessed groove and of the protrusion cooperating therewith (see paragraph bridging pages 2 and 3). The protrusion in the form of a ring (5) that slightly conically tapers on both sides or on only one side is provided protruding from the end face of the head piece (1). This conically tapering ring (5) presses in a sticking manner into the tapering ring groove (6) on the adjoining end face of the pot body or bowl (3), when both housing parts are tightly pressed onto one another (see top of page 7 of the reference).

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Thus, Weppler expressly relies on a conically tapering V-sectional shape of the protrusion (5) fitting into a conically tapering V-sectional groove (6) to establish a tight seal. As understood therefrom, and as can be seen in Fig. 3 of the reference, the radially inner and radially outer surfaces of the protrusion (5) are not arcuate curved surfaces, but rather are flat planar surfaces tapering toward each other in a V-shape.

Thus, if such a seal arrangement as disclosed by Weppler would have been incorporated into, or used as a basis for modifying, the Schiavo et al. apparatus, there still would have been no suggestion toward the presently claimed arrangement in which the protrusion has radially inner and outer arcuate curved protrusion surfaces that are pressed against the inner and outer wall portions of the recess to form two inner and outer circular seals.

Furthermore, present independent claim 7 is directed to an apparatus in which the housing bowl is detachably attached to the housing head, using a releasable clamping device. To the contrary, Weppler discloses preferably a permanent non-detachable union between the housing bowl and the housing head, using a non-releasable clamping device. Particularly, Weppler teaches, in order to achieve a reliable ensured leak-free seal, the outwardly protruding rims or tongues (14, 15) of the housing head and the housing bowl are thermally welded to each other, and then permanently clamped and enclosed by a ring clamp (16) that is injection molded entirely around the joint and the protruding tongues or rims (14, 15) of the housing head and the housing bowl (see all of page 9 of the reference).

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From these teachings, a person of ordinary skill in the art would learn or expect that the type of seal arrangement disclosed by Weppler should be further permanently thermally welded and then permanently enclosed by a molded-on clamp ring (16) in order to achieve a reliable ensured tight seal. Such teachings would have been directly contrary to the presently claimed arrangement of a detachable connection between the housing bowl and the housing head, using a releasable clamping device. Such teachings also would not have been compatible as a modification of the Schiavo et al. apparatus, using a releasable clamp device to detachably secure the head and the bowl. Thus, from a combined consideration of the teachings of the two references, a person of ordinary skill would have expected that a detachable connection as according to Schiavo et al. would not have been suitable for use with the seal arrangement according to Weppler.

- 12) The Election Requirement made in this application, among the different sectional configurations of the cooperating protrusion and recess, establishes that there is a patentably significant distinction between various different sectional configurations of seal members. The V-shaped or wedge-shaped protrusion and recess of Weppler are more similar to the present application's non-elected embodiments of Fig. 6 (wedge-shaped protrusion) and Fig. 7 (wedge-shaped recess) than to the elected embodiment of Fig. 2 as now defined in independent claim 7. Already for this reason, the Election Requirement of record establishes that there is a patentably significant distinction between present claim 7 and the combination of Weppler and Schiavo et al.

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13) For the above reasons, a person of ordinary skill in the art would not have been motivated to combine the teachings of Weppler with those of Schiavo et al., and even if so combined, the prior art teachings would not have suggested the presently claimed arrangement of claim 7. The dependent claims 8 to 13 recite additional features that further distinguish the invention over the prior art. These claims more particularly define the configuration and interaction of the protrusion and the recess to form the two circular seals, with features that are not disclosed or suggested by the references. For these reasons, the Examiner is respectfully requested to withdraw the rejection of claims 1 to 3 as obvious over Schiavo et al. in view of Weppler, because this rejection cannot be applied against any of the new claims 7 to 13.

14) Referring to the middle of page 5 of the Office Action, the rejection of claim 6 as obvious over Schiavo et al. in view of Weppler, and further in view of U. S. Patent 5,154,827 (Ashelin et al.) is respectfully traversed. The subject matter of prior claim 6 is now recited in new claim 13. In this regard, the Examiner has referred to the Ashelin et al. reference for disclosing a filter cartridge formed of a fluoro-resin. Claim 13 depends from claim 7, which has been discussed above in comparison to the combination of Schiavo et al. and Weppler. Even with the teachings of Schiavo et al. regarding the composition of the housing head and housing bowl, and the teachings of Ashelin et al. regarding the composition of the

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filter cartridge, there still would have been no suggestion toward the important features of independent claim 7 as discussed above. Namely, Ashelin et al. provide no further suggestions regarding the presently claimed configuration and interaction of the protrusion and the recess forming the two circular seals. For these reasons, the Examiner is respectfully requested to withdraw the rejection of claim 6 as obvious over Schiavo et al. in view of Weppler and Ashelin et al., because this rejection cannot be applied against any of the present new claims.

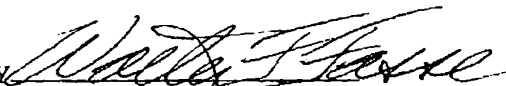
- 15) The additional prior art made of record requires no particular comments because it has not been applied against the claims.
- 16) Favorable reconsideration and allowance of the application, including all present claims 7 to 13, are respectfully requested.

Respectfully submitted,

Masao OCHI et al.
Applicant

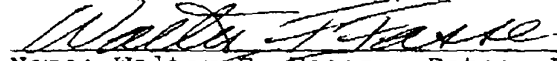
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